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APPEAL BRIEF TRANSMITTAL	Docket Number: 10191/1466	Conf. No. 4295

Application Number	Filing Date	Examiner	Art Unit
09/581,663	August 3, 2000	Shamin AHMED	1765

Invention Title	Inventor
METHOD FOR PROCESSING SILICON BY ETCHING PROCESSES	Volker BECKER et al.

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Washington D.C. 20231

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Date: 3/21, 2003 Reg. No. 36,197

Signature: _____
Jong H. Lee

Further to the Notice of Appeal dated January 3, 2003 (filed in the PTO on January 8, 2003) for the above-referenced application, enclosed are three copies of an Appeal Brief. Accompanying the Appeal Brief is the Appendix to the Appeal Brief. Applicants request a one-month extension of time to file the Appeal Brief. The extended deadline is **April 8, 2003**.

The Commissioner is hereby authorized to charge payment of the 37 C.F.R. § 1.17(c) appeal brief filing fee of $320.00, a one-month extension fee of **$110**, and any additional fees associated with this communication to the deposit account of **Kenyon & Kenyon**, deposit account number **11-0600**.

Dated: 3/21, 2003

By: for _____ (by
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[10191/1466]

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

Applicants	:	Volker BECKER et al.
Serial No.	:	09/581,663
Filed	:	August 3, 2000
For	:	METHOD FOR PROCESSING SILICON BY ETCHING PROCESSES
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APPELLANTS' APPEAL BRIEF
UNDER 37 C.F.R. § 1.192

S I R :

Applicants filed a Notice of Appeal dated January 3, 2003 (filed at the PTO on January 8, 2003), appealing from the final Office Action dated July 5, 2002, in which claims 33, 34, 36-38 and 62 of the above-identified application were finally rejected. This Brief is submitted by Applicants in support of their appeal.

I. REAL PARTY IN INTEREST

The above-identified Applicants and Robert Bosch GmbH of Stuttgart, Germany, are the real parties in interest.

II. RELATED APPEALS AND INTERFERENCES

No appeal or interference which will directly affect, or be directly affected by, or have a bearing on the Board's decision in the pending appeal is known to exist to the undersigned attorney or is believed by the undersigned attorney to be known to exist to Applicants.

III. STATUS OF CLAIMS

Claims 32-69 are pending in this application. Claims 32, 35, 39-52, 54-61 and 64-69 have been allowed. Applicants appealed from the final rejection of claims 33, 34, 36-38 and 62 made in the final Office Action mailed by the Patent Office on July 5, 2002. Of the claims presently on appeal, claims 33, 34 and 36 are independent; claims 37 and 38 ultimately depend from claim 36; and claim 62 depends from claim 33. The claims on appeal are set forth in the Appendix submitted herewith.

Claims 53 and 63 have been objected to, but the Examiner has indicated that these claims would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Should the Board of Appeals affirm the final rejection of claims 33, 34, 36-38 and 62, Applicants request an opportunity to amend claims 53 and 63 to be in independent form including all of the limitations of the base claim and any intervening claims.

IV. STATUS OF AMENDMENTS

Subsequent to the final Office Action mailed on July 5, 2002, Applicants filed a Rule 116 Amendment dated October 7, 2002, which sought to amend claim 33 and cancel claims 34 and 36-38. In the Advisory Action mailed on October 29, 2002, the Examiner indicated that the Rule 116 Amendment will not be entered.

V. SUMMARY OF THE INVENTION

The present invention provides a method for etching a silicon

layered body, in which trenches, defined initially by an etching mask, are etched anisotropically. (P. 2, l. 35 - p. 3, l. 1). In accordance with the present invention, the etching depth achieved in the trenches is not dependent on the width of the trenches, but rather only on the etching time. (P. 3, l. 2-4). The method of the present invention enables defined undercuttings, which permit free-standing structures to be produced in a defined and reproducible manner, and also enables all the micromechanical patterning steps to be performed in one etching chamber without having to remove the silicon body. (P. 3, l. 15-20). In addition, there is no etch attack on the free-standing structures starting from their bottoms or the side walls, and all the free-standing structures have a defined height which is defined by the thickness of the silicon layer applied, regardless of microloading effects, trench widths and the degree of an isotropic undercutting. (P. 3, l. 20-26).

As shown in Fig. 1, a silicon layered body having a first silicon layer (15) is provided with an etching mask (10) for defining lateral recesses (21). In a first etching process with a plasma, trenches (21') are formed by anisotropic etching in the region of the lateral recesses (21). Figure 1 shows a silicon layered body having a silicon layer, which in the following is designated as further silicon layer 17, upon which a separating layer is applied that itself is made of a plurality of separating-layer sections 12, 14, 16. (P. 6, l. 6-10). Located on a first separating-layer section 12 is a thin, optionally patterned conducting layer 13 of conductive, highly doped polysilicon, followed by a second separating-layer section 16 made of silicon dioxide which was produced from the vapor phase by a deposition of silanes. (P. 6, l. 12-17). In the regions free of conducting layer 13, which, according to Figure 1, are occupied by a third separating-layer section 14, first and second separating-layer sections 12, 16 have been completely etched back up to further silicon layer 17, and third separating-layer section 14 has subsequently been grown with a thickness of merely 10 nm to 100 nm at the same location, and is made of silicon dioxide. (P. 6, l. 17-24). Located above separating-layer sections 12, 14, 16 is a first

silicon layer 15 made of epipolysilicon, and the surface of layer 15 is metal-plated and patterned with an etching mask 10 to define lateral recesses 21. (P. 6, l. 24-28).

Figure 2 shows the result of the first anisotropic plasma etching process, having alternating deposition and etching steps, which etches trenches 21' in the region of lateral recesses 21, a Teflon-like film 20 (of $(CF_2)_n$) building up on the side walls of trenches 21'. (P. 6, l. 30-34). Upon reaching separating-layer sections 12, 14, 16, the first etching process comes almost to a complete standstill, since it exhibits a very high selectivity for silicon compared to silicon dioxide, and thus silicon dioxide is virtually not etched. (P. 6, l. 34 - p. 7, l. 2). The achieved depth of trenches 21' is thus defined in each case by the depth of buried separating-layer sections 12, 14, 16, i.e., the thickness of first silicon layer 15. Exposed regions 23 and 24, respectively, are located at the bottom of trenches 21'. (P. 7, l. 2-6).

Figure 3 shows the result of a second plasma etching process, e.g., anisotropic plasma etching, in which process, under strong ion bombardment, exposed regions 23 of thin, third separating-layer section 14 are broken through or removed. (P. 7, l. 8-12). Since second separating-layer section 16 above conducting layer 13 in exposed regions 24 is considerably thicker than third separating-layer section 14, second layer section 16 is merely slightly thinned when separating-layer section 14 is broken through. (P. 7, l. 12-16). Because of this, conducting layer 13 remains completely enclosed by separating-layer sections 12, 16. (P. 7, l. 16-18). After thin, third separating-layer section 14 has been broken through in exposed region 23, a further, preferably isotropic etching of further silicon layer 17 is carried out to produce a cavity 31. (P. 7, l. 18-22). In so doing, a free-standing structure 32 is undercut and produced having a bottom 30 which is made of the material of separating-layer section 14. (P. 7, l. 22-25). This bottom 30, possibly together with a separating-layer remainder 25 of third separating-layer section 14, as well as with Teflon-like

films 20, prevents an etch-back and a structural loss of free-standing structure 32. (P. 7, l. 25-28).

Since the etching mask applied during the etching processes, e.g., in the form of a photoresist mask on the silicon layer, is first removed after all etching is completed, during the etching, aluminum contact areas on the surface of the silicon layer, for example, are completely protected from corrosion, which otherwise is frequently unavoidable when working with etchant gases containing fluorine. (P. 4, l. 21-28). Thus, a system integration can also be achieved in a particularly advantageous manner, i.e., producing a sensor element with integrated circuit on one and the same chip. (P. 4, l. 28-31). Since the method of the present invention prevents undercutting of conducting layers and an uncontrolled formation of etch pockets in the etched silicon layer, swimming of particles in these pockets, which otherwise can scarcely be removed again and which lead to mechanical and electrical faults in sensor elements, is prevented. (P. 4, l. 36 - p. 5, l. 6).

VI. ISSUES FOR REVIEW

The following issues are presented for review on appeal in this case:

A) Whether the subject matter of claims 36-38 is unpatentable under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out distinctly claim the subject matter which Applicants regard as the invention.

B) Whether the subject matter of claims 33, 36-38 and 62 is unpatentable under 35 U.S.C. §103(a) over U.S. Patent No. 5,313,836 to Fujii et al. ("Fujii") in view of publication Silicon Processing For The VLSI Era, Vol. 1: Process Technology, S. Wolf and R. Tauber, Lattice Press 1986, ISBN 0-961672-3-7 ("Wolf"), and in further view of U.S. Patent 6,211,092 to Tang et al. ("Tang").

C) Whether the subject matter of claim 34 is unpatentable under 35 U.S.C. § 103(a) over Fujii, Wolf and Tang, and in further view of U.S. Patent 4,310,380 to Flamm et al. ("Flamm").

VII. GROUPING OF CLAIMS

For purposes of this appeal, the grouping of claims will be as follows: a) for the rejection of claims 36-38 under 35 U.S.C. § 112, second paragraph, all claims will be treated as a single group; b) for the rejection of claims 33, 36-38 and 62 under 35 U.S.C. §103(a), all claims do not stand or fall together: claims 33, 36, 37 and 62 will be argued as one group, and claim 38 will be treated as another group; and c) claim 34 will be treated as a separate group. Appellants reserve the right to present additional reasons why the dependent claims are patentable over the prior art.

VIII. ARGUMENTS

A. Rejection of Claims 36-38 Under § 112, Second Paragraph

Claims 36-38 stand rejected under 35 U.S.C. § 112, second paragraph, due to lack of antecedent basis for the phrase "the freely accessible silicon surface" recited in claim 36. Reversal of this rejection is respectfully requested for the following reasons.

While the Examiner is correct in noting that "the freely accessible silicon surface" recited in claim 36 lacks antecedent basis, "the failure to provide explicit antecedent basis for terms does not always render a claim indefinite." M.P.E.P. 2173.05(e). "If the scope of a claim would be **reasonably** ascertainable by those skilled in the art, then the claim is not indefinite." M.P.E.P. 2173.05(e) (citing Ex parte Porter, 25 U.S.P.Q.2d 1144, 1145 (Bd. Pat. App. & Inter. 1992). Furthermore, "[i]nherent components of elements recited have antecedent basis in the recitation of the components themselves. For example, the limitation 'the outer surface of said sphere' would not require an antecedent recitation that the sphere has an outer surface." M.P.E.P. 2173.05(e).

Claims 36 recites a method for "etching a silicon layered body," in which a first silicon layer (15) is etched in a first etching process, followed by

etching of at least one separating layer (12, 14, 14', 16) in a second etching process, and subsequently a further silicon layer (17, 17') is etched in a third etching process, "wherein, after the third etching process, a $(CF_2)_n$ film (20) is deposited on at least one of a portion of the freely accessible silicon surfaces and freely accessible silicon-oxide surfaces." In view of the explicit recitation of etching through the first silicon layer, the at least one separating layer and the further silicon layer, it is abundantly clear to one of ordinary skill in the art that "the freely accessible silicon surfaces" refers to surfaces that are accessible on at least the first silicon layer and the further silicon layer. For at least this reason alone, the scope of claim 36 is **reasonably** ascertainable by those skilled in the art, and claim 36 is not indefinite. Furthermore, since claim 36 recites the first, second and third etching processes, surfaces created by the etching processes, i.e., the "freely accessible silicon surfaces," have inherent antecedent basis in the recitation of the etching processes and the corresponding silicon layers.

For the foregoing reasons, the indefiniteness rejection of claim 36 and its dependent claims 37-38 under 35 U.S.C. § 112, second paragraph, should be reversed.

B. Rejection of Claims 33, 36-38 and 62 Under § 103(a)

Claims 33, 36-38 and 62 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,313,836 to Fujii et al. ("Fujii") in view of publication Silicon Processing for the VLSI Era, Vol.1: Process Technology, S.Wolf and R. Tauber, Lattice Press 1986, ISBN 0-961672-3-7 ("Wolf") and in further view of U.S. Patent 6,211,092 to Tang, et al. ("Tang"). For the reasons stated below, the obviousness rejection of claims 33, 36-38 and 62 should be reversed.

In rejecting a claim under 35 U.S.C. § 103(a), the Examiner bears the initial burden of presenting a prima facie case of obviousness. In re

Rijckaert, 9 F.3d 1531, 1532, 28 U.S.P.Q.2d 1955, 1956 (Fed. Cir. 1993). To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). In addition, generalized assertions that it would have been obvious to modify the reference teachings do not properly support a § 103 rejection. See In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992). Furthermore, even if a claim concerns a "technologically simple concept," there still must be some finding as to the "specific understanding or principle within the knowledge of a skilled artisan" that would motivate a person having no knowledge of the claimed subject matter to "make the combination in the manner claimed." In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Fed. Cir. 2000). If a proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie obvious*. In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959); M.P.E.P. §2143.01.

The Examiner's obviousness conclusion with regard to claims 33 and 36 is premised on the following: a) Fuji's teaching of three separate etching processes, with the first etching process stopping upon reaching the at least one separating layer; b) Wolf's teaching of dry etching; c) Examiner's conclusory

statement that "any fluoro or chloro carbon-containing etching gas will form polymer in the side wall of the trench"; and d) Tang's teaching of using polymer-forming gas such as C_4F_8 for etch selectivity and providing side-wall passivation.

Initially, Applicants note that the Examiner's conclusory statement that "any fluoro or chloro carbon-containing etching gas will form polymer in the side wall of the trench" is completely unsupported, and, at best, the Examiner is relying on the Examiner's personal knowledge. To the extent the Examiner is attempting to rely on Tang to support the conclusion that it is known in the prior art to achieve "a $(CF_2)_n$ film (20) being built up on side walls of the trenches (21')" as recited in claim 33 or "a $(CF_2)_n$ film (20) is deposited on . . . the freely accessible silicon surfaces and freely accessible silicon-oxide surfaces" as recited in claim 36, Applicants note that the teachings of Tang are completely contradictory to the teachings of Fuji with respect to the etchings processes, thereby rendering the prior art invention being modified unsatisfactory for its intended purpose and changing the principle of operation of the prior art invention being modified, and in turn rendering the asserted obviousness conclusion invalid as a matter of law.

The Examiner suggests that Fuji allegedly teaches the claimed limitations of "first etching process coming at least almost to a standstill upon reaching the at least one separating layer; . . . the separating layer subsequently being etched . . . by a second etching process, and a third etching process then etching the further silicon layer," as recited in claims 33 and 36. However, Tang teaches two plasma etching methods which are both incompatible with the etching method allegedly disclosed in Fuji, as well as being incompatible with the method recited in claims 33 and 36. "In a first preferred 2-substep sequence: a first, non-selective etch extends to below the upper stop layer; and a second, selective etch extends to and stops on the lower stop layer." (Tang, col. 5, l. 43-45). "In a second preferred 3-substep sequence: a first, selective etch on average does not quite reach the upper stop layer; a second, non-

selective etch punches through the upper stop layer; and a third, selective etch extends to and stops on the lower stop layer." (Tang, col. 5, l. 45-50). Clearly, the etching processes taught by Tang are completely incompatible with the etching method allegedly disclosed in Fuji and recited in claims 33 and 36, and given this incompatibility, it is unreasonable to suggest that one of ordinary skill in the art would be motivated to selectively pick out the specific teaching of Tang regarding the application of C_2F_4 film and combine it with the **wet etching** technique of Fuji.

In view of the above explanation, Applicants submit that the Examiner's asserted combination of references is insufficient to render obvious claims 33 and 36, and at best, the Examiner has not provided a showing of any motivation that would support the Examiner's selective combination of teachings from Fuji, Wolf and Tang. In fact the Examiner has done nothing more than selectively assemble the claimed elements from the applied references, using the Applicants' specification and claims as a blueprint, which is a classic example of impermissible hindsight reconstruction. For at least these reasons, Applicants submit that claims 33 and 36, as well as their dependent claims 37, 38 and 62, are allowable over the combination of Fuji, Wolf and Tang, and the obviousness rejection of claims 33, 36, 37, 38 and 62 should be reversed.

Independent of the above, Applicants submit that claim 38 is not rendered obvious by the combination of Fuji, Wolf and Tang, for the following reasons. In support of the rejection of claim 38, which recites that "during the deposition of the $(CF_2)_n$ film (20), ionic bombardment is used which prevents the formation of the film (20) on all locations accessible for perpendicular ion incidence," the Examiner summarily concludes that "it would have been obvious that the ionic bombardment will prevent the formation of the polymer film on the locations accessible for perpendicular ion incidence because all the constituents are similar as the claimed invention." (Final Office Action, p. 4).

This assertion by the Examiner is nothing more than a classic example of a generalized assertion of "obvious to modify," which does not properly support a § 103 rejection. See In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992). For this independent reason, claim 38 is allowable over the combination of Fuji, Wolf and Tang, and the obviousness rejection of claim 38 should be reversed.

C. Rejection of Claim 34 Under § 103(a)

Claim 34 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Fujii, Wolf and Tang, and in further view of U.S. Patent No. 4,310,380 to Flamm, et al. ("Flamm"). It is respectfully submitted that the combination of Fujii, Wolf, Tang and Flamm does not render claim 34 obvious for at least the following reasons.

To establish prima facie obviousness, three criteria must be satisfied. First, there must be some suggestion or motivation to modify or combine reference teachings. In re Fine, 837 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). This teaching or suggestion to make the claimed combination must be found in the prior art and not based on the application disclosure. In re Vaeck, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. In re Merck & Co., Inc., 800 F.2d 1091, 231 U.S.P.Q. 375 (Fed. Cir. 1986). Third, the prior art reference(s) must teach or suggest all of the claim limitations. In re Royka, 490 F.2d 981, 180 U.S.P.Q. 580 (C.C.P.A. 1974). In addition, generalized assertions that it would have been obvious to modify the reference teachings do not properly support a § 103 rejection. See In re Jones, 21 U.S.P.Q.2d 1941 (Fed. Cir. 1992). Furthermore, even if a claim concerns a "technologically simple concept," there still must be some finding as to the "specific understanding or principle within the knowledge of a skilled artisan" that would motivate a person having no knowledge of the claimed subject matter to "make the combination in the manner claimed." In re Kotzab, 55 U.S.P.Q.2d 1313, 1318 (Fed. Cir. 2000). If a proposed modification would render the prior art invention being modified

unsatisfactory for its intended purpose, then there is no suggestion or motivation to make the proposed modification. In re Gordon, 733 F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). If the proposed modification or combination of the prior art would change the principle of operation of the prior art invention being modified, then the teachings of the references are not sufficient to render the claims *prima facie obvious.* In re Ratti, 270 F.2d 810, 123 USPQ 349 (CCPA 1959); M.P.E.P. §2143.01.

Claim 34 recites three separate etching processes, with the "third etching process . . . etching the further silicon layer . . . wherein one of an isotropic plasma-etching process and an isotropic etching process with etching gases selected from the group xenon difluoride, chlorine trifluoride, bromine trifluoride, and iodine pentafluoride is used as a third etching process." In support of the rejection of claim 34, the Examiner asserts that because Flamm teaches "that fluorine-containing gas such as chlorine trifluoride or bromine trifluoride is used to etch silicon isotropically at uniform and relatively high etching rate with respect to other such as silicon oxide, . . . it would have been obvious to . . . employ Flamm et al.'s teaching into modified Fujii et al.'s method for uniform and selective etching of silicon . . . [since, by doing] so, one could have a high etching rate at a relatively lower power levels and higher selectivity with excellent uniformity." (Final Office Action, pp. 4-5).

Applicants initially note that Tang teaches two plasma etching methods which are both incompatible with the etching method allegedly disclosed in Fujii, as well as being incompatible with the method recited in claim 34. "In a first preferred 2-substep sequence: a first, non-selective etch extends to below the upper stop layer; and a second, selective etch extends to and stops on the lower stop layer." (Tang, col. 5, l. 43-45). "In a second preferred 3-substep sequence: a first, selective etch on average does not quite reach the upper stop layer; a second, non-selective etch punches through the upper stop layer; and a third, selective etch extends to and stops on the lower

stop layer." (Tang, col. 5, l. 45-50). Clearly, the etching processes taught by Tang are completely incompatible with the etching method allegedly disclosed in Fujii and recited in claim 34, and given this incompatibility, it is unreasonable to suggest that one of ordinary skill in the art would be motivated to selectively pick out the specific teaching of Tang regarding the application of C_2F_4 film and combine it with the **wet etching** technique of Fujii.

In addition, while the Examiner contends that "it would have been obvious to . . . employ Flamm et al.'s teaching into modified Fujii et al.'s method for uniform and selective etching of silicon . . . [since, by doing] so, one could have a high etching rate at a relatively lower power levels and higher selectivity with excellent uniformity," it is simply unreasonable to suggest that there would be motivation to specifically pick out the teachings of Flamm regarding the use of fluorine-containing gas for dry, isotropic etching of silicon and combine it with the selected teachings of Fujii, which deals with **wet etching**, let alone combine the selected teachings of Flamm and Fujii with the selected teachings of Tang.

Applicants submit that the Examiner has done nothing more than selectively pick and choose the specific teachings from the applied references to achieve the claimed invention of claim 34, without any motivation that is derived from the overall teachings of the four applied references, Fujii, Wolf, Tang and Flamm. Accordingly, Applicants submit that the Examiner's obviousness conclusion with respect to claim 34 is based on impermissible hindsight reconstruction, and claim 34 is allowable over the applied combination of Fujii, Wolf, Tang and Flamm. Accordingly, the obviousness rejection of claim 34 should be reversed.

IX. CONCLUSION

For the foregoing reasons, it is respectfully submitted that the final rejection of claims 33-34, 36-38 and 62 should be reversed.

Respectfully submitted,

KENYON & KENYON

Dated: 3/21, 2003

By: for Richard L. Mayer (by [illegible] R. No. 36,197)
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Applicants	:	Volker BECKER et al.
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Commissioner for Patents
Washington, D.C. 20231

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Date: 3/21, 2003 Reg. No. 36,197

Signature: _____
Jong H. Lee

APPENDIX TO APPELLANTS' APPEAL BRIEF
UNDER 37 C.F.R. § 1.192

S I R :

The claims involved in this appeal, claims 33, 34, 36-38 and 62, in their current form after entry of all amendments presented during the course of prosecution, are set forth below:

APPEALED CLAIMS:

33. A method for etching a silicon layered body, which has a first silicon layer (15) that is provided with an etching mask (10) for defining lateral recesses

(21); work with a plasma being carried out in a first etching process, and trenches (21') being formed by anisotropic etching in the region of the lateral recesses (21); at least one separating layer (12, 14, 14', 16) being buried between the first silicon layer (15) and a further silicon layer (17, 17'), and the first etching process coming at least almost to a standstill upon reaching the at least one separating layer; and the separating layer (12, 14, 14', 16) subsequently being etched through in an exposed region (23, 23') by a second etching process, and a third etching process then etching the further silicon layer (17, 17'); wherein a $(CF_2)_n$ film (20) being built up on side walls of the trenches (21') at least one of in the course of the first etching process, prior to the third etching process and during the third etching process.

34. A method for etching a silicon layered body, which has a first silicon layer (15) that is provided with an etching mask (10) for defining lateral recesses (21); work with a plasma being carried out in a first etching process, and trenches (21') being formed by anisotropic etching in the region of the lateral recesses (21); at least one separating layer (12, 14, 14', 16) being buried between the first silicon layer (15) and a further silicon layer (17, 17'), and the first etching process coming at least almost to a standstill upon reaching the at least one separating layer; and the separating layer (12, 14, 14', 16) subsequently being etched through in an exposed region (23, 23') by a second etching process, and a third etching process then etching the further silicon layer (17, 17'); wherein one of an isotropic plasma-etching process and an isotropic etching process with etching gases selected from the group xenon

difluoride, chlorine trifluoride, bromine trifluoride, and iodine pentafluoride is used as a third etching process.

36. A method for etching a silicon layered body, which has a first silicon layer (15) that is provided with an etching mask (10) for defining lateral recesses (21); work with a plasma being carried out in a first etching process, and trenches (21') being formed by anisotropic etching in the region of the lateral recesses (21); at least one separating layer (12, 14, 14', 16) being buried between the first silicon layer (15) and a further silicon layer (17, 17'), and the first etching process coming at least almost to a standstill upon reaching the at least one separating layer; and the separating layer (12, 14, 14', 16) subsequently being etched through in an exposed region (23, 23') by a second etching process, and a third etching process then etching the further silicon layer (17, 17'); wherein, after the third etching process, a $(CF_2)_n$ film (20) is deposited on at least one of a portion of the freely accessible silicon surfaces and freely accessible silicon-oxide surfaces.

37. The method as recited in Claim 36, wherein the $(CF_2)_n$ film (20) is initially deposited on all of the at least one of the accessible silicon surfaces and the silicon-oxide surfaces, and it is subsequently removed from all of the at least one of the silicon surfaces and the silicon-oxide surfaces accessible for perpendicular ion incidence.

38. The method as recited in Claim 36, wherein, during the deposition of the $(CF_2)_n$ film (20), ionic bombardment is used which prevents the formation

of the film (20) on all locations accessible for perpendicular ion incidence.

62. The method as recited in claim 33, wherein the etching mask (10) and the remaining $(CF_2)_n$ films (20) are finally removed from the etched silicon layered body in an oxygen plasma stripper, using an oxygen ashing process.

Respectfully submitted,

KENYON & KENYON

Dated: 3/21, 2003

By: [signature] (by [signature] R. No. 36,197)
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